

Exhibit C

ADVERTISEMENT

 Vail, CO
March 25-27



DIGIDAY



[SUBSCRIBE](#) | [LOGIN](#)

[NEWS](#) ▼

[DIGIDAY +](#)

[PODCASTS](#)

[EVENTS](#)

[AWARDS](#)

THE PROGRAMMATIC PUBLISHER

Unraveling header bidding's problems with user data

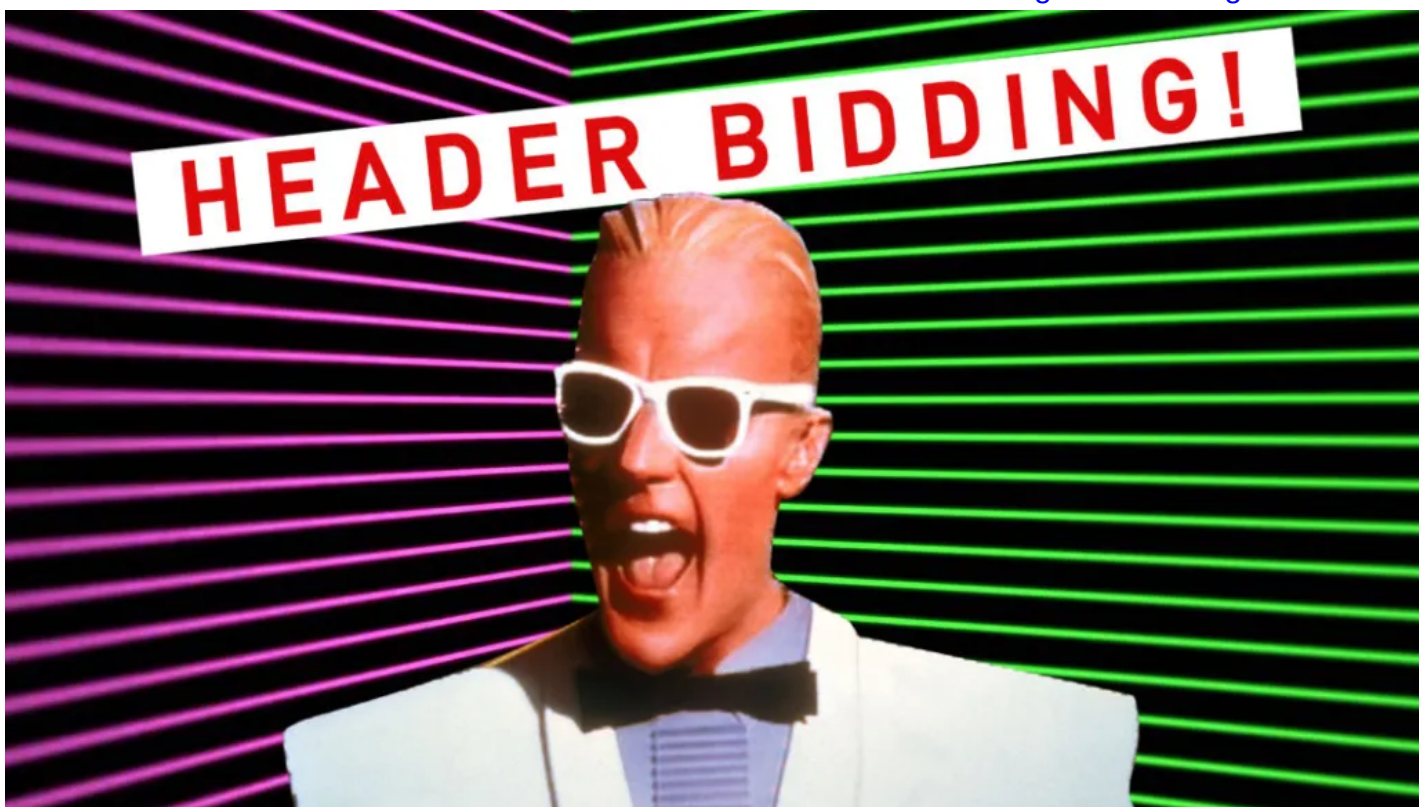
By [Ross Benes](#) • March 20, 2017 • 3 min read •



2/3 FREE ARTICLES

Become a Digiday+
member for full access

[VIEW MEMBERSHIPS](#)



Ad tech is all about tradeoffs.

Although header bidding has been heralded for its ability to increase revenue for publishers, an overlooked downside is that it can expose user data by allowing all bidders to access audience data. Header bidding also makes it easier for fraudsters to hide in the noise created by the vast amount of data points that come from multiple parties bidding on all available impressions.

“There are some real security concerns about header bidding that aren’t being talked about,” said an ad-fraud researcher requesting anonymity.

Because waterfalling — a technique where publishers move inventory from one market to the next — is inefficient at driving revenue, many publishers adopted header bidding, which simultaneously offers inventory to multiple exchanges before making calls to their ad servers. While waterfalling is clunky, one benefit of this technique is that it limits how much user data the bidders could harvest, said Todd Garland, CEO of digital ad network BuySellAds.

For example, if the highest-bidding network in the waterfall wins 50 percent of the impressions in the auction, then subsequently, half of the impressions for sale won't get passed along to other networks. With this approach, each network only obtains user data from whoever they sell impressions to, which is only a fraction of the total audience that the total impressions in the auction are sold to, Garland said.

But with header bidding having all calls go out simultaneously, each bidder can get access to data from all the users who were served impressions from the auction. A Rubicon Project spokesperson said, on average, the top 100 publishers in terms of

TRENDING IN THE PROGRAMMATIC PUBLISHER

01 WTF SERIES

WTF is a data clean room?



02 WTF SERIES

WTF is Google's Privacy Sandbox?



SPONSORED

How publishers are turning conversions into loyal subscribers and reducing churn



03 THE PROGRAMMATIC PUBLISHER

Apple's expanding ad ambitions: A closer look at its journey toward a comprehensive ad tech stack



comScore traffic have four header bidding partners. But it also isn't unheard of for publishers to near double digits with their bidders.

"Many exchanges allow demand-side platforms to take bid requests and basically just 'listen' for data without spending money," said independent ad tech consultant Brad Holcenberg. "So the more [bidding partners] you work with, the more likely the data gets to their customers and can leak out further from there."

• Sign up for the Digiday Daily Newsletter

Get the latest news on media, marketing and the future of TV, delivered each weekday morning

Business email

Job title

SIGN UP

While sources did not share any first-hand experiences, data leaking can be problematic for both publishers and users. When data leaks, it can devalue publisher

inventory because retargeters use audience data from premium publishers to target their users while they're visiting websites that have lower CPMs. Hyper-targeting can also irritate users and turn them onto ad blocking. And in the most extreme cases, leaks of personal data can allow bad actors to hack people's personal accounts and devices.

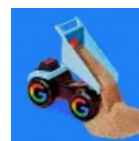
Jeremy Hlavacek, vp of programmatic at The Weather Company, said that while header bidding does make it easier for programmatic platforms to obtain user data, this effect is mitigated by the fact that data aggregators are connected to most supply-side platforms, so they can find indirect ways to obtain and sell user data even if waterfalling limits direct access to user data. But Hlavacek pointed out that with multiple partners bidding on all impressions available in the auction, header bidding significantly increases the amount of data points in the exchanges. Other sources said it's this data deluge that is most problematic when it comes to security.

"Header bidding generates as much as 10 times the amount of calls to get the same result," said Tom Kershaw, chief

MOST READ

01 LIFE BEYOND THE COOKIE

Here's what The Trade Desk actually thinks about Google's Privacy Sandbox



02 LIFE BEYOND THE COOKIE

Digiday's definitive, if not exhaustive, 2024 Google Chrome third-party cookie deprecation glossary



technology officer of Rubicon Project.

“Whenever you generate that much noise, it is much harder to track [fraudulent activity] because it becomes easier for people to hide.”

Speaking on the condition of anonymity, an exec from an ad tracking firm said that data leakage is not affected by whether a header bidding product is browser-based or server-side. However, moving the auction to direct server connections could theoretically give publishers more control over who is bidding on their inventory.

“Regardless of the setup, it’s about your governance and having control over which vendors are involved with bidding,” the exec said. “It can get out of control if it is not managed properly.”



<https://digiday.com/?p=228164>

• Stories like this, in your inbox each morning

Business Email

Job Title

03 LIFE BEYOND THE COOKIE

Nine questions to consider as Google starts its move away from third-party cookies



04 DIGIDAY @ CES

AI Briefing: What marketing and tech experts noticed at CES 2024



05 THE PROGRAMMATIC MARKETER

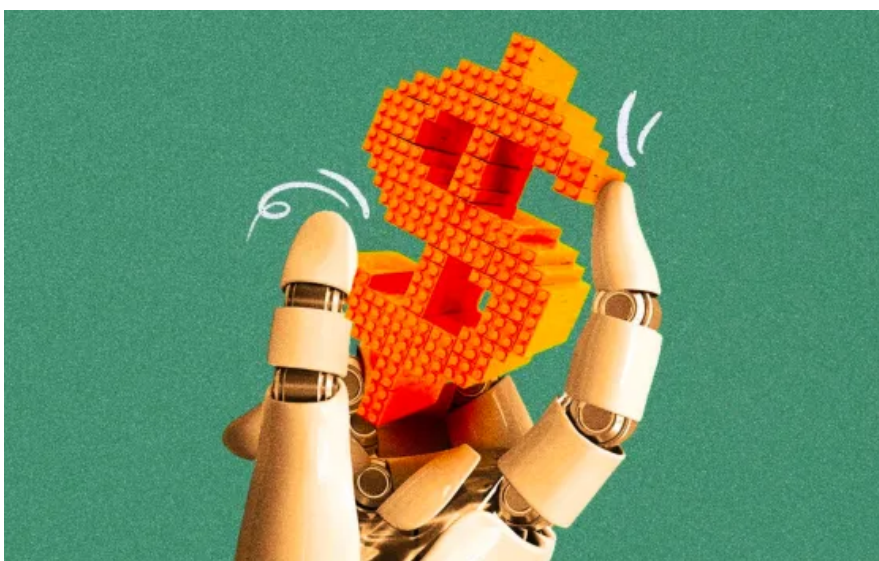
DSPs prepare for heavy lifting within Privacy Sandbox



SIGN UP

MORE IN MEDIA

[VIEW MORE »](#)

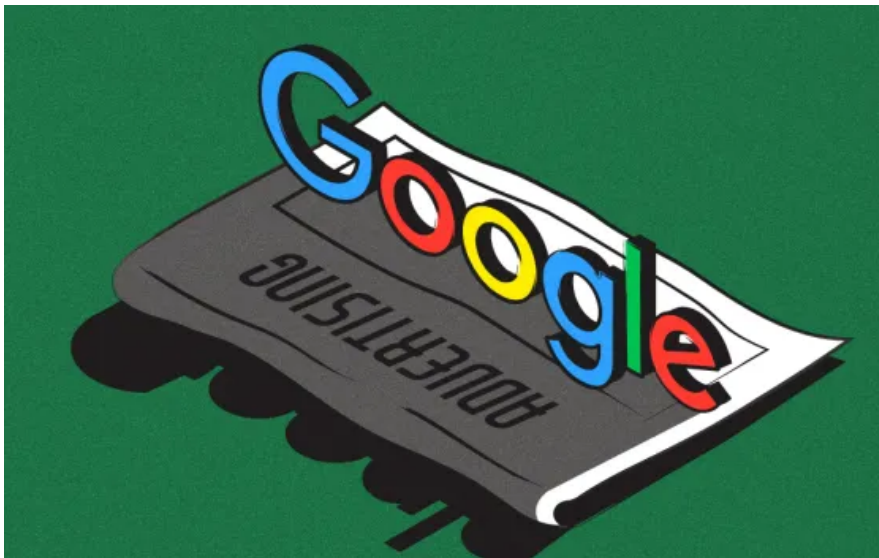


GENERATIVE AI

Beyond CES: Samsung, Google and Qualcomm are kicking off the race for AI-powered devices

January 18, 2024 • 6 min read

After CES 2024 and Samsung Unpacked, emerging tech trends are already gaining momentum across AI, mixed reality headsets and more.



MEMBER EXCLUSIVE

Media Briefing: Here are the Privacy Sandbox proposals publishers are prioritizing in early tests

January 18, 2024 • 10 min read

Publishers are picking and choosing where they want to play in Google's Privacy Sandbox.



BEYOND ADS

Professional publishers show out at Davos amid spikes in event sponsorship revenue

January 17, 2024 • 4 min read

Publishers swarm to Davos swaddled by sponsorship revenue.

DIGIDAY+

Get access to tools and analysis to stay ahead of the trends transforming media and marketing

SUBSCRIBE

NEWSLETTER

Get Digiday's top stories every morning in your email inbox.

Business email

SIGN UP

CONNECT

Follow @Digiday for the latest news, insider access to events and more.

